

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and the following remarks are presented for the Examiner's consideration.

All the claims originally filed in the case (claims 1 through 41) remain pending and stand rejected under 35 USC 103. The examiner is respectfully requested to reconsider the rejection of the claims in consideration of the arguments and comments that follow and withdraw the rejection.

Rejection of Claims 1-5 and 11-30 as Unpatentable Over Pannell

Claims 1 through 5 and 11 through 30 have been rejected under 35 USC 103(a) as unpatentable over U.S. Patent No. 5,307,645 issued to Pannell (the "Pannell" patent). The basis for this rejection is the Examiner's conclusion that it would be obvious to one skilled in the art to use either fixed or variable restrictors in the dual refrigeration circuit of Pannell. More specifically, the Examiner acknowledges that Pannell does not teach the use of a flow-regulating expansion valve in one refrigeration circuit of a dual-circuit refrigeration system and the use of a fixed restrictor, such as a capillary tube, in the other refrigeration circuit. However, based on Pannell's statement that the expansion devices in his dual circuits "may be valves or capillary tubes", the Examiner concludes that "It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a combination of one expansion valve and one fixed restrictor in the system of Pannell for the purpose of cost saving (since fixed restrictors are

cheaper than valves) in the instance where only one of the restrictors need be variably controlled.” Applicants respectfully disagree with the Examiner’s conclusion.

The Examiner’s conclusion set forth above indicates that a two-fold motivation is required for one skilled in the art to use an expansion valve in one circuit of a dual refrigeration system, such as Pannell’s system, and a capillary tube in the other circuit of the system. First, according to the Examiner, the motivation of cost savings would have to be present and, second, there would have to exist a circumstance where only one of the restrictors need be variably controlled. Presumably, the Examiner recognizes that the motivation of cost alone is insufficient and Applicants agree. If cost were the sole motivational factor, one skilled in the art would be led to employ a fixed restrictor in each of the circuits. However, the rejection of the claims is not made any more rational by the Examiner’s reliance on a second motivational factor related to the existence of a circumstance where only one of the restrictors need be variably controlled. The Examiner has not identified any such circumstance in the prior art and, consequently, the Examiner’s analysis assumes the conclusion he has adopted. Stated otherwise, what the Examiner has proposed, in effect, is that if a set of circumstances exists where a dual circuit refrigeration system is applicable and one of the circuits must have a variable restrictor but the other circuit can have either a variable restrictor or a fixed restrictor, it would not be patentable to employ a fixed restrictor in the circuit where either type of restrictor may be used. However, the Examiner has not identified such a set of circumstances in the prior art. Certainly Pannell does not disclose such a set of circumstances. Similarly, the Examiner’s observation that “the same effect could be achieved using a system with two expansion valves, wherein the second valve is simply left unmodulated” begs the question since, as indicated above, the Examiner has not cited any prior

art that teaches a dual circuit arrangement where the refrigerant is modulated in one circuit but not in the other circuit.

It is also to be noted that claims 1 through 5 call for a flow restricting device in one refrigeration circuit for regulating the flow of the refrigerant in response to variations in the heat load at the evaporator in the one refrigeration circuit and a flow restricting device in the other refrigeration circuit for passing the refrigerant to the evaporator in the other refrigeration circuit at a substantially constant rate of flow. Each of method claims 11 through 30 contain similar limitations. The Examiner's conclusion that it would be obvious to use fixed or variable restrictors in the Pannell invention does not address these limitations since, as the Examiner points out in the Office action, variable restrictors may be unmodulated and modulation can be accomplished with fixed restrictors through the instrumentality of the compressor.

For the foregoing reasons, it is respectfully submitted that the rejection of claims 1 through 5 and 11 through 30 is improper and should be withdrawn.

Before proceeding with a discussion of the rejection of claims 6 through 10 and 31 through 41, it is first noted that the Examiner has alleged with respect to claim 16 that "it is common and typical to control expansion valves according to loads based on desired temperature levels and to add second system capacity when the load is greater than a further increment" and has taken official notice of that fact. Official notice can be properly taken of a circumstance only when it is so notorious that no reference to the prior art is required, and Applicants respectfully submit that such is not the case with respect to the quoted statement. Perhaps in recognition of that fact, the Examiner also makes reference to the rejection of claims 6 through 10 and 31 through 41 in support of the rejection of claim 16 and a further discussion of the Examiner's

allegation, as it applies to claim 16, appears below with respect to a discussion of the rejection of claims 6 through 10 and 31 through 41.

Rejection of Claims 6 through 10 and 31 Through 41 as Unpatentable Over Pannell in View of Del Toro et al.

Claims 6 through 10 and 31 through 41 have been rejected under 35 USC 103(a) as being unpatentable over Pannell in view of Del Toro et al. (the “Del Toro” patent). In addition, as noted above, the Examiner in support of the rejection of claim 16 based on the Pannell patent makes reference to the Del Toro patent.

In rejecting claims 6 through 10 and 31 through 41 in view of Pannell and Del Toro, the Examiner makes the observations that “Pannell does not specifically teach activation/deactivation in response to temperature reference points” but that “Del Toro teaches a ... dual refrigeration cycle system [similar to Pannell] wherein the two cycles are activated/deactivated based on temperature reference points.” The Examiner then concludes that “It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply this control feature of Del Toro et al. to the system of Pannell for the purpose of using the two cycles to efficiently cool the conditioned space.”

Applicants respectfully submit that the Examiner’s analysis is deficient in at least several respects. More than merely not teaching activation/deactivation in response to temperature reference points, Pannell gives no indication that an activation/deactivation arrangement would be beneficial. Pannell identifies a problem that exists with the use of large capacity compressors for effective cooling of recreational vehicles and suggests that a dual circuit system solves that

problem without regard to the particular ambient temperatures involved and without any need to operate the dual circuits other than in unison. Consequently, one skilled in the art would not be motivated to modify the Pannell invention in view of the Del Toro disclosure. In this regard, Applicants submit that the Examiner's conclusion implies that a control feature as taught by Del Toro would improve the efficiency of the Pannell invention but there is nothing disclosed in either the Pannell or Del Toro patents to suggest that the Del Toro system would cool more efficiently than the Pannell system.

In addition to the foregoing, it should be noted that claims 16 and the claims dependent thereon require not only that the dual refrigeration circuits be separately activated but also that the flow of the refrigerant in one circuit be regulated in response to variations in the heat load at the evaporator in the one circuit while the refrigerant in the other refrigeration circuit is conveyed to the evaporator in that circuit at a substantially constant rate of flow. Neither Pannell nor Del Toro discloses such an arrangement.

It is additionally noted that claim 21 and the claims dependent thereon, as well as claim 32 and the claims dependent thereon, require that the cooling circuit that is activated when the temperature is at least as great as a preselected temperature be the circuit in which the flow of the refrigerant to the evaporator is regulated in response to variations in the heat load at the evaporator. Alternatively, claim 26 and the claims dependent thereon, as well as claim 37 and the claims dependent thereon, require that the circuit in which the flow of the refrigerant to the evaporator is regulated in response to variations in the heat load at the evaporator be the circuit that is activated when the temperature of the space to be cooled is greater than the preselected temperature by a preselected incremental amount. There is nothing in the Pannell or Del Toro patents that suggests the implementation of these alternative relationships.

For the foregoing reasons, it is respectfully submitted that claims 1 through 41 of the subject application are patentable over the prior art and that the case is in condition for allowance, a notice of which is respectfully requested.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 36214.

Respectfully submitted,

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